REMARKS

This amendment is in response to the Office Action of February 21, 2007 in which claims 1-20 were rejected under 35 U.S.C. 103(a).

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In the Amendment submitted herein, various of the original claims are changed in ways believed related only to matters of form. For example, reference numerals/labels are removed from the claims, which change does not affect the scope of the claims per MPEP § 608.01(m) (the use of reference characters is considered as having no effect on the scope of the claims). The claims are amended to remove "step of" language. Independent claims 1, 10 and 14 are amended to recite a statement regarding line memory. All introduced amendements do not change the scope of the amended claims and/or fully supported by the specification.

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In Section 2, claims 1, 3-5, and 10-12 were rejected under 35 U.S.C. 103(a) as being unpatentable over Lin, US 6,778,216.

Regarding independent claim 1, the Examiner's arguments are inaccurate, do not follow the MPEP guidelines and, therefore, need further clarification in order to distinguish the present invention from Lin.

Paragraph 2143 states:

"To establish a *prima facie* case of obviousness three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicant's disclosure. ***In re Vaeck***, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)."

First, in regard to claim 1 of the present invention, the reference of Lin quoted by the Examiner is a prior art described in the background section of the present patent application wherein the high-resolution image is sent to the processing unit (preview processor 5 shown in Figure 1 of Lin) which then performs vertical and horizontal downscaling. The full image of Lin is stored in memory 7 of Lin (see col. 3, lines 64-67).

Lin does not explicitly shows the camera sensor as a separate module which performs horizontal downscaling, as recited in claim 1 of the present invention. In other words, the preview processor 5 of Lin cannot simultaneously belong to the camera sensor **14** and the processing block **16** shown in Figure 1 of the present patent application and which are separated by a camera bus (e.g., CCP). Lin's solution uses an internal bus (as shown in Fig. 1) that is totally different bus than CCP (or other present camera buses).

Also, it is not completely clear where this camera bus (or its equivalence) could be located in Figure 1 of Lin, but most likely it could be an arrow between CCD-controller 4 and the internal bus or an arrow between blocks 4 and 6 in Figure 1 of Lin.

Moreover, the preview processor 5 of Lin must be able to read data from a memory 7 (via the internal bus), and thus it needs to be located on a processor side, otherwise a separate memory for storing a full scale image would be also needed on a camera sensor. The applicant is of opinion that this is not the case according to Figures or description of Lin, and thus the preview processor 5 of Lin is not comprised in a camera module. Therefore, Lin does not disclose the step "generating a real-time horizontally downscaled video signal using horizontal downscaling of the real-time video signal **by the camera sensor**" as recited in claim 1 of the present invention. Even if the Examiner will argue that the preview processor 5 belongs to the camera sensor, contrary to what is articulated above, then Lin does not disclose the step "generating the real-time vertically and horizontally downscaled video signal using vertical downscaling of the real-time horizontally downscaled video signal by **a processing block**" of claim 1 of the present invention because the preview processor 5 cannot belong to two modules at the same time, as argued herein.

The important difference between the present invention and Lin is an amount of required memory since in the present invention clearly less memory is needed. In Lin, a full scale image needs to be stored in the memory, which means that it must be transmitted from a camera module to a memory via some interface. This might result in a

bottleneck for a whole system. In the present invention, on the contrary, a full resolution image is not transmitted from the camera sensor but only a horizontally downscaled image is transmitted to the processing block. According to embodiments of the present invention this horizontal downscaling is accomplished **without line memories** (see page 12, lines 12-13 of the present patent application) which allows not to store the full image and significantly reduces the amount of memory needed for processing. Independent claim 1 (as well as claims 10 and 14) is amended to emphasize this important difference by adding **"without using a line memory".** On the contrary, Lin uses line memories (line buffers) for horizontal downscaling (see col. 6, lines 34-39 of Lin). This further distinguishes claim 1 of the present invention form Lin.

Thus, Lin does not describe and/or teach all limitations of the independent claim 1 of the present invention and fail to meet the third criterion of MPEP paragraph 2143 quoted above.

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Even if only for the sake of argument we assume that Lin teach or suggest all the limitations of independent claim 1, it is further noted by the applicant that a modification of Lin's teaching in order to arrive at the subject of matter of claim 1, contrary to what is alleged by the Examiner, will teach away from the present invention recited in claim 1 and/or will destroy the intended function or invention integrity of Lin.

For example, even if the horizontal downscaling of Lin is performed first before vertical downscaling, as alleged by the Examiner, it will teach away from teaching of the

present invention because said downscaling will be performed by the processing block using **line memories** and stored full image (as discussed herein), contrary to what is recited in claim 1 of the present invention. Also, in order to correspond to embodiments recited in claim 1 of the present invention, block 5 of Lin should be broken into two parts: one in the camera sensor and another in the processing block which are connected, e.g., by the camera bus, which will destroy the integrity of the Lin's invention.

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Furthermore, in regard to claim 1 of the present invention, the Office failed to demonstrate or provide any reasonable arguments in regard to "suggested desirability or motivation" or "reasonable expectation of success" for combining references by a person skilled in the art at the time of the invention without hindsight, as required by MPEP paragraph 2143 and an extensive case law on the subject

If again only for the sake of argument we assume that Lin teaches or suggests all the limitations of independent claim 1 (contrary to what is proven above), there is no **suggested desirability or motivation**, expressed explicitly, implicitly or even hinted at by Lin or generally available to one of ordinary skill in the art to modify the reference of Lin to arrive at the subject matter of claim 1 of the present invention (as required by the MPEP Paragraph 2143 referenced above and by the case law) without the benefit of hindsight.

Moreover, in regard to claim 1 of the present invention, the Examiner alleged that a person skilled in the art at the time of invention would be motivated to modify

the reference of Lin in order to perform the horizontal downscaling first and then perform vertical downscaling "to quickly produce a real-time preview to allow image verification". The downscaling process of Lin uses the memory (see blocks 7 and 6 in figure 1 of Lin) for said vertical and horizontal downscaling where the image is temporarily stored (see col. 3, lines 64-67). In the present invention the horizontal downscaling is performed first by the camera sensor (e.g., as described in regard to Figure 4 of the present invention) in order to reduce the memory needed for the downscaling operation and to avoid the need for a **line memory** in the camera sensor (see page 12, lines 12-13 of the present patent application). Since Lin anyway stores the image video signal in the memory 7 of figure 1 (see col. 3, lines 64-67 of Lin), there is no motivation for a person skilled in the art at the time of the present invention to reverse the order of downscaling operation of Lin and to use an inverted image format recited in claim 1 of the present invention because, according to Lin, it would not be any advantage for using the inverted format (i.e., the amount of used memory would be the same) compared to claim 1 of the present invention which does not require a line memory thus reducing the amount of needed memory, as pointed out above.

In other words, it is not self-evident that a solution according to the present invention could be implemented either performing first a horizontal scaling and then a vertical scaling or vice versa. That is because an amount of required memory would be remarkably different if sensor's reading mode cannot be changed (currently existing cameras do not provide possibility to this kind of change). In Lin's

solution, the order of scaling operations is not relevant as a whole image is stored anyway. In the present invention, the order of scaling operations is relevant as the amount of required memory can be minimized from a few lines to a few pixels by correctly selecting the order of scaling operations. The present invention is based on the assumption that image data needs to be transmitted from the camera module to a separate processor via some camera bus (e.g. CCP or CCP2), and it is thus advantageous to reduce an amount of data before transmission in case a display has smaller resolution than the camera sensor. On the contrary, in Lin's solution a whole image is stored before any processing takes place.

In other words, the Examiner's reasoning (e.g., quickly produce an image) for modifying Lin to arrive at the subject matter of claim 1 is practically similar to "shared advantage" approach such as achieving competitive advantage or economical advantage (which can make any invention obvious) irrelevant to the "problem to be solved" by the present invention, e.g., **reducing needed memory for the image processing**.

The Manual of Patent Examining Procedure (the MPEP) clearly refers to the "problem to be solved" approach and cites a relatively recent Federal Circuit case supporting its use:

"The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." *In re Kotzab,* 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also *In re*

Lee, 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002) (discussing the importance of relying on objective evidence and making specific factual findings with respect to the motivation to combine references); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). MPEP 2143.01.

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Furthermore, in regard to motivation to combine references, The Federal Circuit Court has several times further expressly addressed the issue.

For example, *in re Geiger, supra,* it is stated, in holding that the USPTO "failed to establish a *prima facie* case of obviousness":

"Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984)."

Furthermore, Judge Newman, in her opinion in *In re Lee*, 277 F.3d 1338, 1343, 61 USPQ2d 1430, 1433 (Fed Cir. 2002), repeats this fundamental principle:

"When patentability turns on the question of obviousness, the search for and analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness."

The Examiner failed to show prima facie case of obviousness because he does not show any basis even remotely present in the art at the time of the invention

for combining or modifying references (see MPEP paragraphs 2142, 2143 quoted above, and the case law), as shown above. Therefore, it is highly unlikely that somebody of ordinary skill in the art would have been reasonably expected to modify teaching of Lin quoted by the Examiner at the time of the invention and to find the solution claimed by the Applicant without the benefit of hindsight (again assuming for sake of argument only that Lin teaches or suggests all the limitations of independent claim 1).

Moreover, the Office Action of February 21, 2007 does not show that Lin provides teaching or suggestion for **the reasonable expectation of success** by modifying the reference of Lin to find the solution claimed by the Applicant in claim 1, as required by the MPEP paragraph 2143, quoted above to establish a *prima facie* case of obviousness.

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Thus, based on all above arguments, claim 1 is not obvious under 35 U.S.C. 103(a) as being unpatentable over Lin.

Amended claims 10 and 14 are independent claims, which are similar in scope to claim 1 of the present invention. Therefore, above arguments regarding novelty and non-obviousness of independent claim 1 are fully applied to claims 10 and 14 of the present invention. Therefore, claims 10 and 14 are not obvious under 35 U.S.C. 103(a) as being unpatentable over Lin as well.

Regarding claims 3-5 and 11-12, these are dependent claims of independent claims 1 and 10. Independent amended claims 1 and 10 are not unpatentable over Lin as shown

above. Since each of the dependent claims 3-5 and 11-12 narrows the scope of the corresponding novel and non-obvious independent claim 1 and 10, non-obviousness of claims 1 and 10 will compel non-obviousness of claims 3-5 and 11-12.

More arguments in regard to specific limitations recited in dependent claims to obviate their obviousness, alleged by the Examiner, can be made.

For example, in regard to claims 3 and 4, the Examiner refers to the same memory 7 to reject both claims 3 and 4, whereas according to claims 3 and 4 of the present invention there are two different memories located in different blocks/modules.

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In Section 3, claim 2 was rejected under 35 U.S.C. 103(a) as being unpatentable over Lin, US 6,778,216 in view of Haavisto, US 2002/0071037.

Regarding claim 2, it is dependent claim of independent claim 1. Independent amended claim 1 is not unpatentable over Lin as shown above. Since dependent claim 2 narrows the scope of the novel and non-obvious independent claim 1, non-obviousness of claim 1 will compel non-obviousness of claim 2.

In regard to claim 2, the Examiner contradicts himself. On one hand the horizontal downscaling, according to the present Office Action, is performed by the preview processor (engine) 5 which is apparently not a part of the camera sensor. Then where the Examiner wants to put a camera compact port bus recited in claim 2 of the present invention: before the preview processor 5 or in between modules 51 and 53 in the block 5 of Lin? If it is before the

preview processor 5 of Lin, then it is different from what is recited in claims 1 and 2 of the present invention because the bus should be used for transferring already horizontally downscaled video signal; if on the other hand the Examiner wants to put the bus in the "middle" of the preview processor 5 of Lin, again it would be different from claims 1 and 2 of the present invention because the bus should be on the output of the camera sensor. At any rate, incorporating teaching of Haavisto into Lin will be equivalent to providing the video signal to the preview processor 5 of Lin which will teach away from the present invention because the bus should be used for transferring already **horizontally downscaled video signal** as pointed out herein.

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In Section 4, claims 6, 8, 9, 13-16, 18, and 19 were rejected under 35 U.S.C. 103(a) as being unpatentable over Lin, US 6,778,216, in view of Yi, US 7,003,040.

Amended claim 14 is independent claim, which is similar in scope to claim 1 of the present invention. Claim 1 is patentable over Lin in view of Yi, as shown herein. Therefore, above arguments regarding novelty and non-obviousness of independent claim 1 are fully applied to claim 14 of the present invention. Therefore, claim 14 is not obvious under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Yi as well.

Regarding claims 6, 8, 9, 13, 15-16, 18, and 19, these are dependent claims of independent claims 1, 10 or 14. Independent amended claims 1, 10 and 14 are not unpatentable over Lin in view of Yi as shown above. Since each of the dependent claims 6, 8, 9, 13, 15-16, 18, and 19

narrows the scope of the corresponding novel and non-obvious independent claim 1, 10 and 14, non-obviousness of claims 1, 10 and 14 will compel non-obviousness of claims 6, 8, 9, 13, 15-16, 18, and 19.

More arguments to obviate obviousness in regard to specific limitations recited in dependent claims and motivation to combine the quoted references, alleged by the Examiner, can be further made if requested by the Office.

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In Section 5, claim 20 was rejected under 35 U.S.C. 103(a) as being unpatentable over Lin, US 6,778,216, in view of Yi, US 7,003,040, as applied to claim 16 above, and further in view of Haavisto, US 2002/0071037.

Regarding claims 5 and 20, these are dependent claims of independent claims 1 and 14. Independent amended claims 1 and 14 are not unpatentable over Lin in view of Yi as applied to claim 16 above, and further in view of Haavisto, as shown above. Since each of the dependent claims 5 and 20 narrows the scope of the corresponding novel and non-obvious independent claim 1 and 14, non-obviousness of claims 1 and 14 will compel non-obviousness of claims 5 and 20.

More arguments to obviate obviousness in regard to specific limitations recited in dependent claims and motivation to combine the quoted references, alleged by the Examiner, can be further made if requested by the Office.

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In Section 6, claims 7 and 17 were rejected under 35 U.S.C. 103(a) as being unpatentable over Lin, US 6,778,216, in view of Yi, US 7,003,040, as applied to claims 6 and 16 above, and further in view of Atsum, US 2005/0036046.

Regarding claims 7 and 17, these are dependent claims of independent claims 1 and 14. Independent amended claims 1 and 13 are not unpatentable over Lin, in view of Yi, as applied to claims 6 and 16 above, and further in view of Atsum, as shown above. Since each of the dependent claims 7 and 17 narrows the scope of the corresponding novel and non-obvious independent claim 1 and 14, non-obviousness of claims 1 and 14 will compel non-obviousness of claims 7 and 17.

More arguments to obviate obviousness in regard to specific limitations recited in dependent claims and motivation to combine the quoted references, alleged by the Examiner, can be further made if requested by the Office.

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The objections and rejections of the Office Action of February 21, 2007 having been obviated by amendment or shown to be inapplicable, withdrawal thereof is requested and passage of claims 1-20 to issue is solicited.

Respectfully submitted,

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AZF/mef
May 21, 2007